

Mr. Youngsoo Son

Project Manager

Doosan Heavy Industries & Construction Co. Ltd.

Plant EPC BG

Upper Trishuli-1 HEPP Construction Site

Nepal

Our ref.:

OE-TJ-UT1-OUT Site-DHI 020

Date:

16 February 2022

Subject: Submission of Review Note RN-0054

Ref.: UT1-C-150-CVL-DG-43004_RevE

Dear Sir,

Please find our comments and replies in the Review Note enclosed herewith to this letter.

Sincerely,

.....
Mr. Lutz RÖMER
Chief Resident Engineer (CDE)
Upper Trishuli-1 HEP (216MW)



CC: NWEDC

Enclosure:
Review Note (RN-0054)

UPPER TRISHULI-1 HEP (216MW)

| | |
|-------------------------|--|
| Client | Nepal Water and Energy Development Company Private Limited |
| Owner's Engineer | Tractebel Engineering GmbH / Jade Consult |

REVIEW NOTE

| | | | |
|------------------------------------|---|------------------------------|-------------------|
| Contractor | Doosan Heavy Industries & Construction Co., Ltd. | | |
| Title of the Document | Excavation and Initial Support Drawings of Adit No. 3 | | |
| Document No. | UT1-C-150-CVL-DG-43004-01, UT1-C-150-CVL-DG-43004-02, UT1-C-150-CVL-DG-43004-03, UT1-C-150-CVL-DG-43004-04, UT1-C-150-CVL-DG-43004-05 | Revision | E |
| Date of Documents | 31.01.2022 | Received Date | 03.02.2022 |
| Transmittal Form No. | UT1-HEP-DHI-D-0139 | | |
| Previous Review Date/Status | 26.01.2021/AN | Prev. Review Note No. | RN-0051 |
| Review Note No. | RN-0054 | Present Review Date | 04.02.2022 |
| | | Present Review Status | AN |

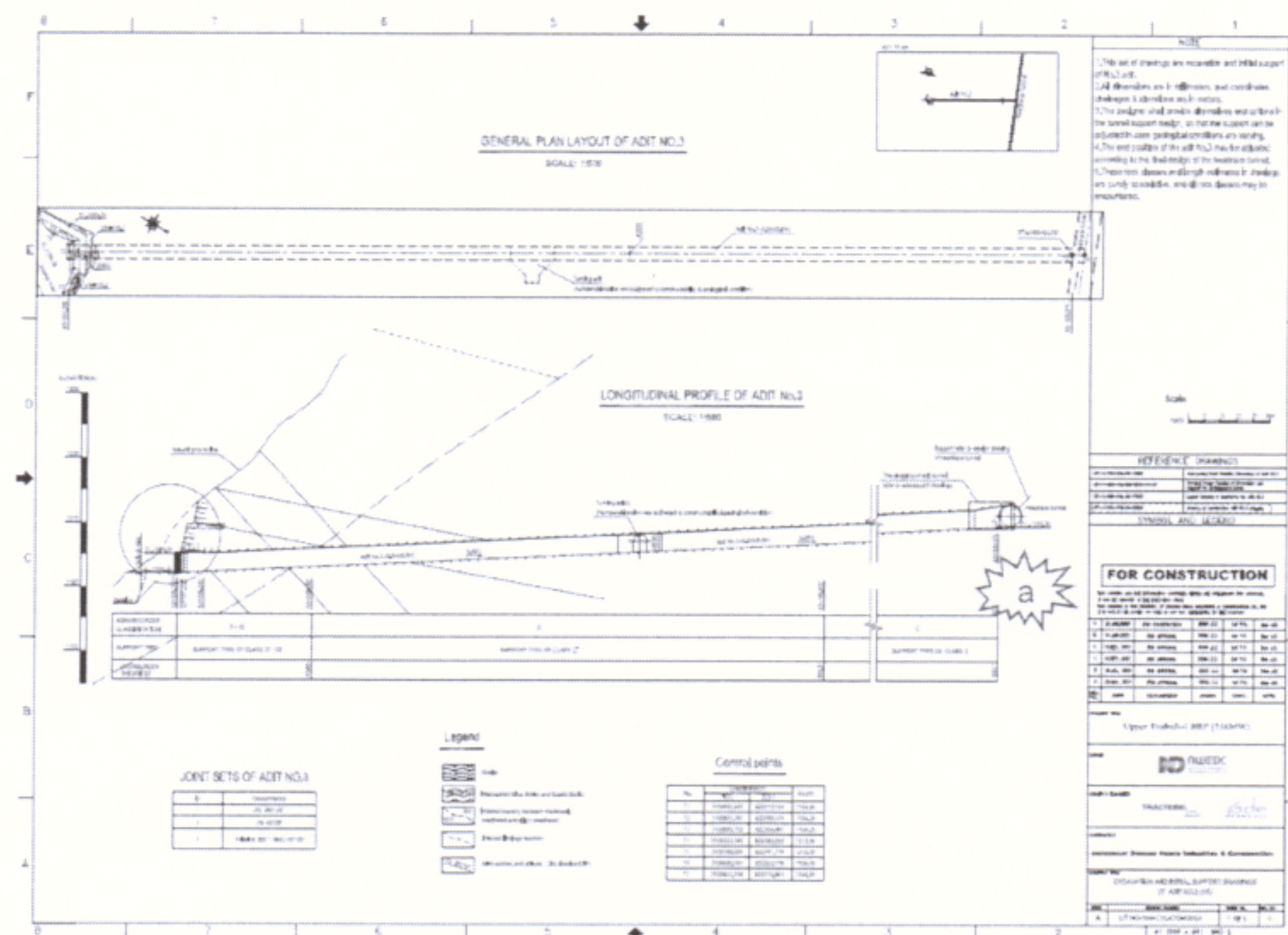
A: Approved AN: Approved as Noted RR: Returned for Resubmission FI: For Information, only.

General Comments

Drawing No. UT1-C-150-CVL-DG-43004-05 was added to this series of drawings and is herewith reviewed. It refers to the junction of Adit No. 3 and the Headrace Tunnel. On the other drawings few comments are remaining.

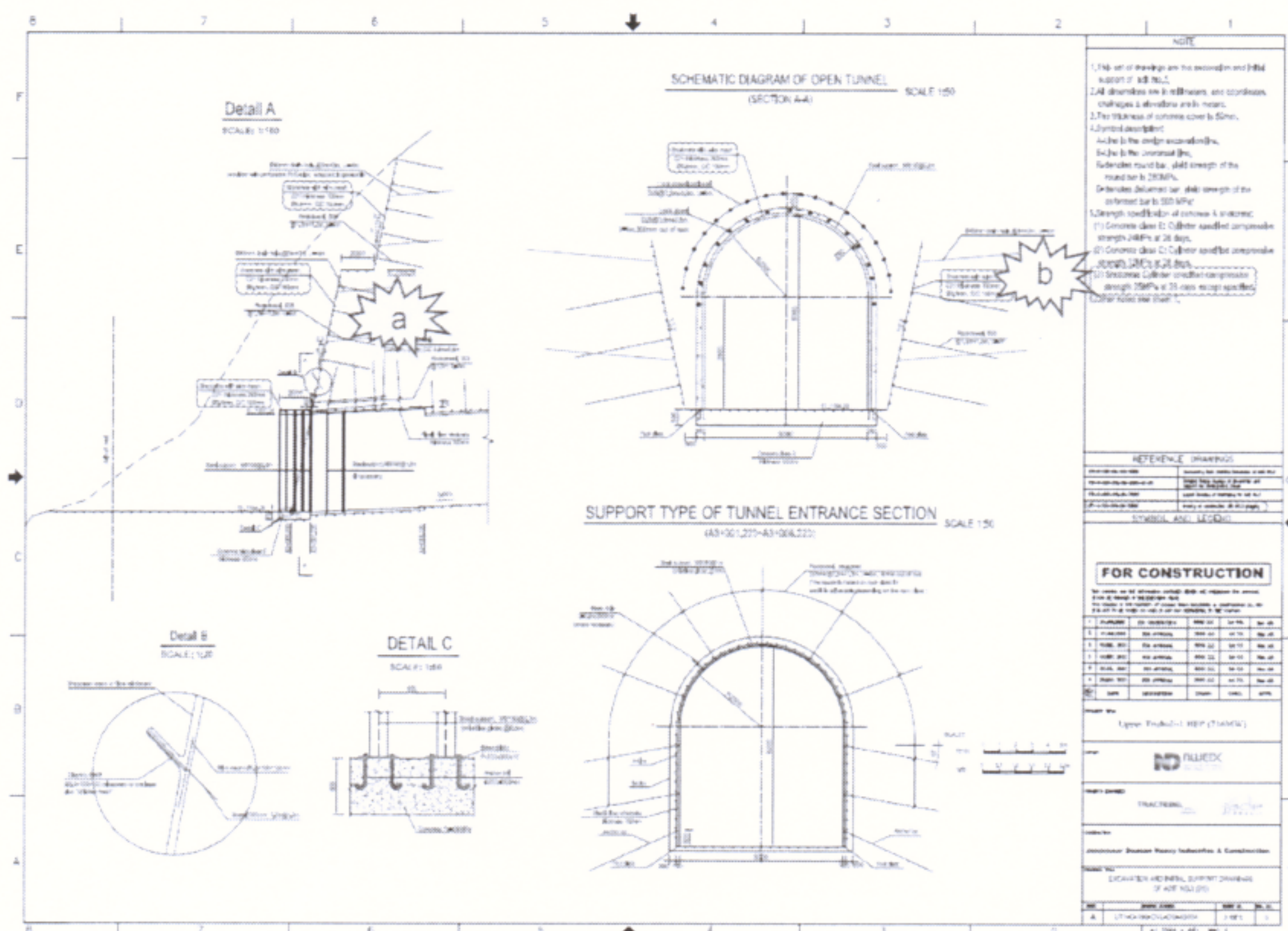
The drawings are marked and commented. The drawings shall be revised and resubmitted with the incorporated comments.

Drawing UT1-C-150-CVL-DG-43004-01, Rev. 0



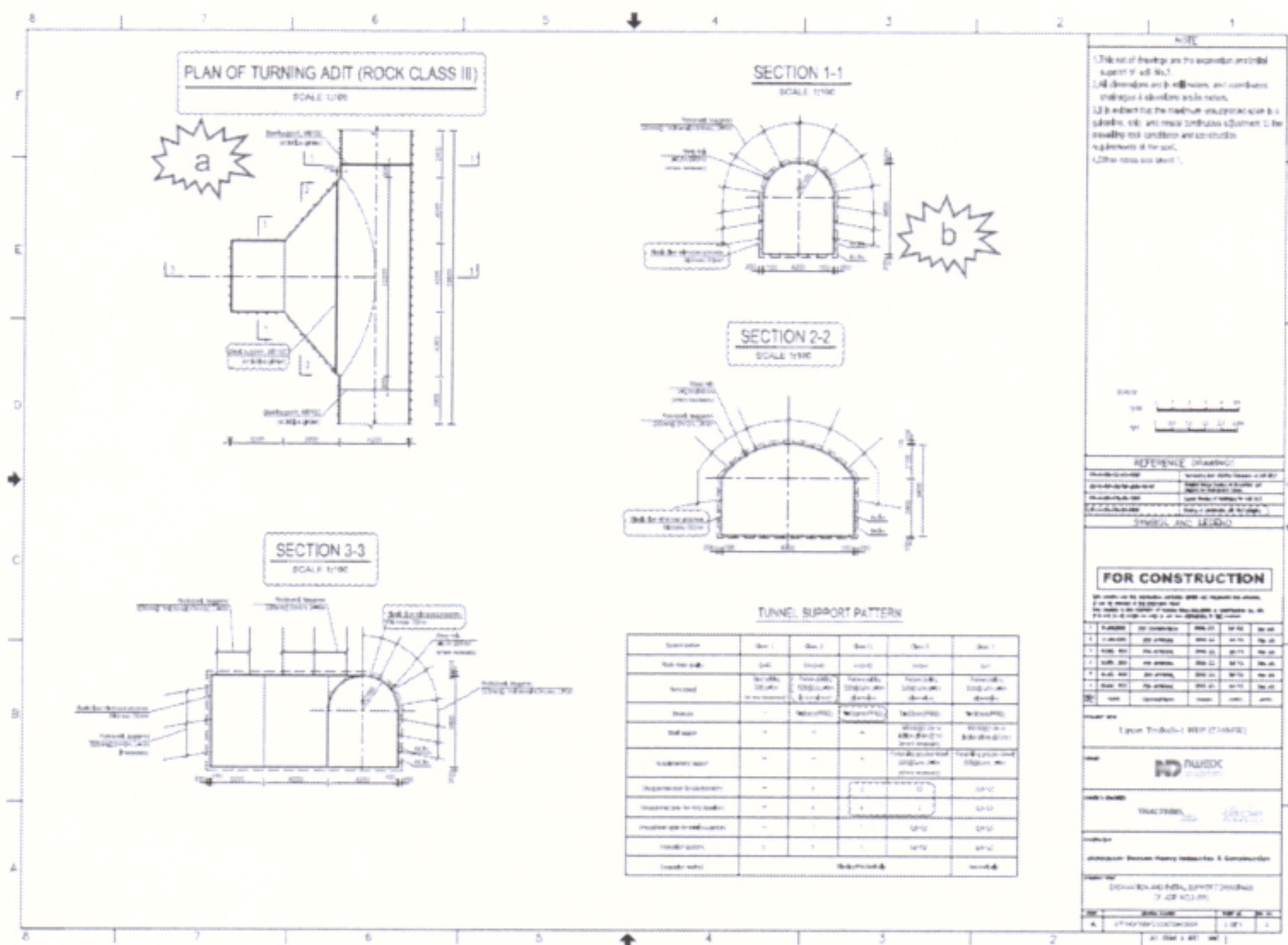
a) **Add** to the sentence “This drawing... ..in the execution stage, **with written approval of the OE.**”

Drawing UT1-C-150-CVL-DG-43004-02, Rev. 0



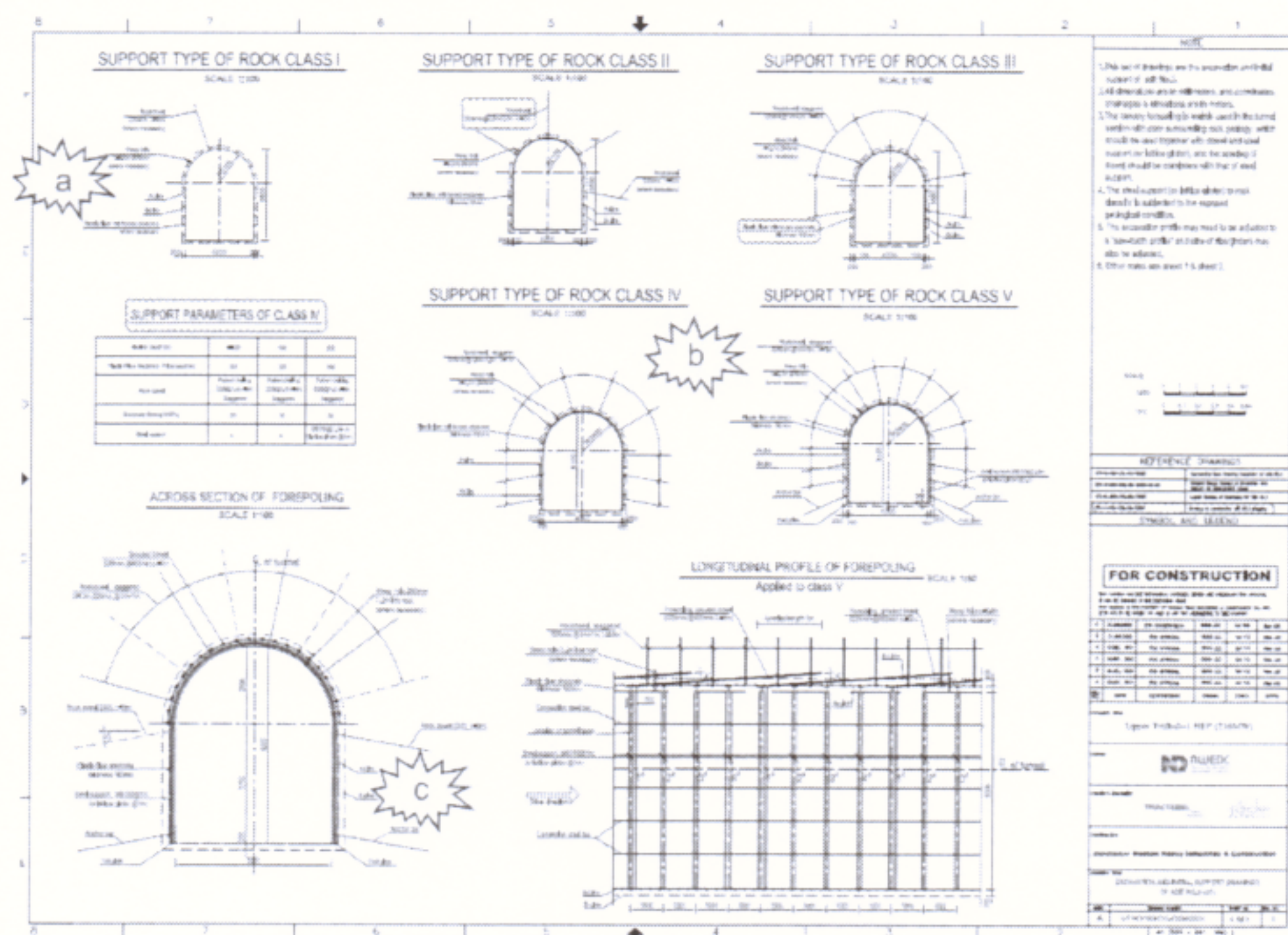
- Replace the 3 m long drain holes with weep holes (for rock slopes).
- Provide a note that refers to the early strength requirements as per contract.

Drawing UT1-C-150-CVL-DG-43004-03, Rev. 0



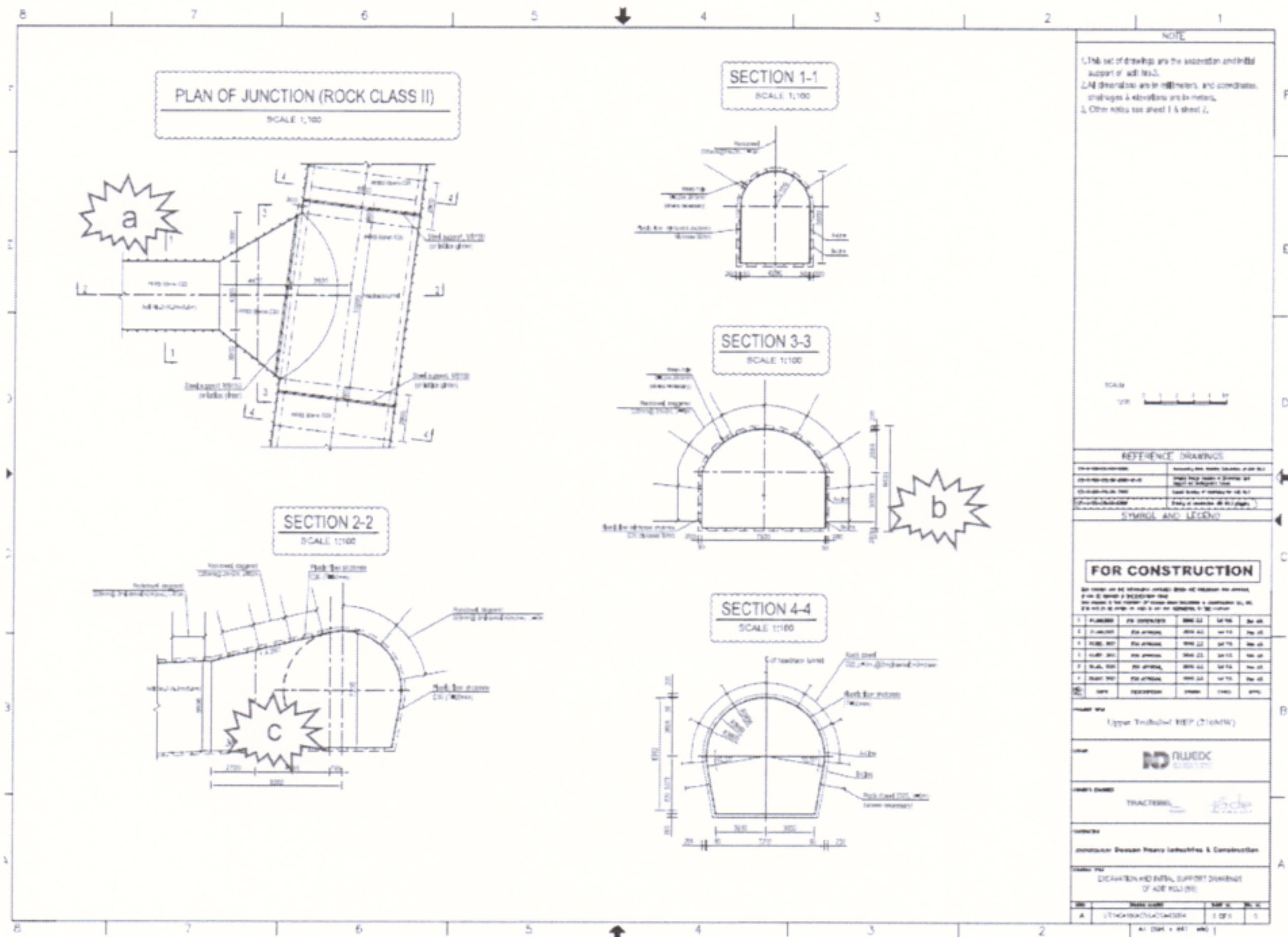
- a) Note that the steel ribs at the start and end of the turning bay are only required in Class III, IV and V.
- b) For Class III in sidewalls no rock dowels below 1.5 m required. Revise.

Drawing UT1-C-150-CVL-DG-43004-04, Rev. 0



- a) No weepholes in Class I. Omit.
- b) In Class IV there should be no change of shotcrete type from C25 to C30. Use C25 and thickness of 150 mm, applied in two layers of 75 mm.
- c) Dowels in sidewalls need to be spaced narrower to take moments from steel rib.

Drawing UT1-C-150-CVL-DG-43004-05, Rev. 0



- The junction of the adit and the Headrace Tunnel should be orthogonal ($=90^\circ$), otherwise shuttering for concreting will be very difficult. This requires a change in alignment of the adit shortly before the plug. Redesign.
- No dowels in sidewalls close to the tunnel invert required.
- Indicate concrete plug.

Ulrich Glawe

Dr. Ulrich Glawe